D CUMENT RESUME

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ABSTRACT

One of the twelve exemplary programs summarized in the Introduction to Right to Read's "Effective Reading Programs: Summaries of 222 Selected Programs" (CS001934), this program is designed for the elementary school children of Andover, Massachusetts. These children are from high-income families and usually perform well in school. The program begins with individualized instruction in basic reading skills. Children are pretested and then assigned specific lessons. Skill instruction, for an individual or a small group, is followed by individually paced work on practice sheets, and a posttest. The teacher checks the posttest and then plans the student's next activities. When the students are able, they spend over half their time on individualized reading and free reading, and in discussions with the teacher about what they have read. (WR/AIR)

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PROGRAM AREA: Reading

PROJECT TITLE: Andover's Individualized Reading System (AIRS)

LOCATION: Andover, Massachusetts

SOURCES AND LEVEL OF FUNDING: Federal ESEA Funds: $2,000.00 (purchase of books)
Local Funds: $161,631.00 (prorated over 5 yea

PROGRAM START DATE: 1972

BRIEF DESCRIPTION OF PROJECT:

Goals and objectives. To help each of Andover's elementary pupils master basic reading skills, AIRS provides individualized skills instruction through lesson sheets keyed to diagnostic pretests. Although the emphasis on phonetic skills in beginning reading is similar to that of the program used prior to AIRS, the program now places greater emphasis on word meaning and comprehension skills, starting from the end of grade one. This emphasis also supports the second major goal of the program--to foster enjoyment of literature. Beyond the beginning reading level, students spend at least half the instructional period in reading and discussion of trade books and literature.

Context. Andover is a small city in Massachusetts. Children served by the Andover schools come predominantly from white families with an income above $15,000. Because children in well-to-do Andover generally perform at or above average, AIRS was developed to focus on specific skill problems through diagnostic pretests, and not to hold a child to a generalized instructional sequence which he did not need.

Program Description.

Grade levels, years of operation, size--All 2,500 children in grades one through six are included in the individualized reading program, which has now been operating for two years in all six elementary schools.

Curricula, material, time involved--Andover's Individualized Reading System is built around three areas of emphasis--instruction in basic reading skills, individualized reading, and free reading for fun. Instruction in any of the five skills areas begins with a pretest which is then analyzed by the teacher. She records test results and prescribes specific programmed lessons for the student according to his needs. The programmed lessons are keyed to a complete hierarchy of skills and behavioral objectives--the "Andover Skills Bank," developed by the teaching staff. They come from a movable cart, which is also stocked with laminated sheets culled from over 14,000 published workbooks. Materials are color-coded and marked according to level in the Andover Skills Bank. To allow completely individualized work, the materials cart contains one level above and below the nominal class grade level.

Children spend 8 to 10 hours a week on language arts. They work independently when they can, with many group or individual lessons conducted

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by the teacher wherever necessary, particularly in the beginning reading stage. When a child completes the skills instruction in his assigned lesson, he may go to the materials cart again to obtain a color-coded, special practice "Follow-Up" which evaluates mastery of the lesson. If he needs them, the cart also contains additional practice sheets and skillbooks. When he takes the posttest, the teacher records the results and plans further activities for the student, allowing him to go on if he is ready, and giving additional help if he needs it.

Beyond the beginning level, over half the student's time is spent on individualized reading and free reading. The materials available for individualized reading include trade books with related activities to reinforce skills, and recommended literature selections. Each classroom has a designated area where reading can take place without distraction, and when a child completes a book he has an individual discussion with the teacher, in which she may check on his comprehension, discuss new vocabulary words, or listen to an oral reading passage, and in which they share reactions and feelings about the book.

Staffing, preservice/inservice training--To serve 2,500 children in grades one through six, the project staff includes one Reading Director, seven Reading Specialists, and 100 teachers, all of whom are full time. In addition, there are 25 aides who work parttime, and the school principals devote part of their time to reading project matters.

The teachers receive about 15 hours of inservice training followed by supervised practicum in the classroom. To a large extent, independent study of the instructional techniques in the various skills areas is possible because the Teacher's Manuals are programmed. These manuals also guide the paraprofessional aides in performing some instructional tasks, in addition to their regular function of correcting pre- and posttests and worksheets.

Facilities--In each classroom, one area is set aside for individualized reading, and the rest of the room is arranged for skills instruction. Three classrooms share the movable cart which is located in the hallway and which holds the variety of laminated skill sheets, programmed lessons, follow-ups, and other materials. Little more than rearranging of a typical classroom is required to adapt it to the program.

Parental involvement--Parent volunteers help to conduct a "Great Books" literature program for fifth and sixth grade children who have completed the skills sequence. Volunteers may also give some help with record-keeping tasks in the classroom. The program also employs the traditional parent coffees and visitation days to acquaint community members with reading instruction in the schools.

Cost.

The average annual per-pupil cost in the district is $1074. The cost of the skills program over the period 1971-75 comes out to $1.00 less per pupil than the normal program in this area. Cost breakdowns are given below; all are exclusive of salaries.

Per-pupil cost--$13.00

Initial and maintenance cost--A publisher estimated the cost of the Skills Bank at $840 for a class of 30, to be prorated over three years. The cost of 90 hardbound trade books was estimated at $360; these would also be expected to last three years or more. Therefore, the initial cost for a class of 30 would be $1200; yearly cost if $400.

Total cost--Andover's total cost over five years is $163,631.00 for 2,500 pupils.

EVIDENCE OF EFFECTIVENESS: (See attached section.)

EVIDENCE OF EFFECTIVENESS:

Evaluation conducted by. William C. Drummond of the Math Department, and Marcus Lieberman, Ph.D., of Harvard University Graduate School of Education.

Sample size and method. The whole school district is involved, from grade one to grade six; 2,500 students in all. All students do the Stanford Achievement Tests yearly, and have done so since before the new program started.

Comparison methods. Comparisons are made for each grade, in each of the areas of Word Study Skills, Paragraph Meaning and Word Meaning, both with national norms, and with the Andover norms for the two years prior to implementation of the program. Furthermore, since our focus is upon reading skills, and therefore upon Paragraph Meaning and Word Meaning, we can use Word Study Skills as a pointer in support of the Andover assertion that no significant changes have occurred in the composition of the population; these skills reflected progress from a program used earlier (prior to 1971).

Finally, since the whole district is involved, a substantial proportion of each grade represented the previous grade in the previous year.

Measures. The Stanford Achievement Tests are used at all levels from grade one onwards. This battery has subtests for word reading, paragraph meaning, vocabulary, and, for the first three grades only, word study skills. There are five levels of the test battery, with four covering the range needed here. The MMY says of them, that reliabilities are high enough to inspire confidence, with satisfactory relevance; in general these test batteries are highly regarded.

In addition, criterion-referenced tests are an integral part of the program in all areas; these are of course not used to demonstrate advantages of the program, since the SAT provides the norm-referenced standards.

Grade equivalents are quoted, together with standard deviations.

Data collection. All students are tested annually, about May. We have the results for 1971, for 1972 immediately prior to the start of the program, and for 1973. Tests were applied by the teaching staff in all cases.

Data analysis. Descriptive statistics used included means and medians, standard deviations and variances, and correlation coefficients. Inferential statistics used were t-tests. The crucial demonstrations are given in the following two tables.

Stanford Achievement Test, Paragraph Meaning

Grade	Gr. Equiv. Norm	1972 AIRS Mean	1973 AIRS Mean	t	p <	Prop. of S.D. (Increase)	
1	1.9	2.09	2.60	11.25	.001	.70	
2	2.9	3.09	3.80	10.14	.001	.67	N=1110
3	3.9	4.22	5.30	14.30	.001	.90	
4	4.9	5.30	6.30	9.35	.001	.60	
5	5.9	6.28	7.50	11.98	.001	.79	N=1350
6	6.9	7.12	9.10	15.90	.001	1.01	

Stanford Achievement Test, Word Meaning/Reading

Grade	Gr. Equiv. Norm	1972 AIRS Mean	1973 AIRS Mean	t	p <	Prop. of S.D. (Increase)	
1	1.9	2.15	2.20	1.10	.25	.08	
2	2.9	3.05	4.00	15.42	.001	1.02	N=1110
3	3.9	4.10	5.40	19.40	.001	1.21	
4	4.9	5.35	6.10	8.24	.001	.52	
5	5.9	6.05	7.30	14.64	.001	.87	N=1350
6	6.9	7.45	9.30	20.33	.001	1.29	

Changes in outcome and their reliabilities. As all samples used were large (from 300 to 500), significance tests are of little import; nevertheless in the focal areas of Paragraph Meaning and Word Meaning, all grades in 1973, after 9 months in the new program, showed gains over their predecessors (i.e., Andover norms) which were significant at better than the .001 level. For all six grades on Paragraph Meaning these gains were .6 standard deviations or larger; on Word Meaning the gains for all except grade one were a half standard deviation or larger; that for grade one was small but positive.

Comparisons with national norms show even greater advantages. In 1972 all grade performances were only slightly above the national norms, by 2 to 4 months. By 1973 the acceleration ranged from 7 months at the end of grade one, to 2 years at grade six.

By contrast, performances on Word Study Skills, the focus of an earlier Andover program (and of the new program in grade one only) maintained a fairly steady advantage of about 1 year above national norms, with no clear trend between 1972 and 1973.

There have been no perceptible changes in the composition of the population over the past three years.

Educational significance. This new program has produced mean gains in grades one through six, in each of two fundamental reading skills, of at least a half standard deviation over district expectancies. For the two years 1971 and 1972 (the latter just prior to full-scale implementation of the program) the average performance was at or slightly above the national norms. In 1972, for example, assuming a normal distribution, approximately 40 percent of the students in grade two would have been scoring below the national norm on Paragraph Meaning. By 1973 only about 20 percent would be below this point. Almost exactly the same figures apply to grade 4 on the Word Meaning test. Gains for both of the tests in all other cases are greater than this, with the sole exception of Word Meaning in grade one, where the shift was only from about 35 percent down to about 32 percent.